

object based on the output values of a position and/or attitude sensor which is used by a mixed reality display device, comprising the steps of:

entering a real image derived from a real image input unit;

generating a virtual image of a measuring object having a predetermined position and/or attitude;

inputting a position and/or attitude information from the sensor when a position and/or attitude of the measuring object included in the real image matches a position and/or attitude of a virtual image of the measuring object by changing a position and/or attitude of the real image input unit, and

generating calibration information from the inputted position and/or attitude information

---

22. Cancelled.

23. (Twice Amended) A computer-readable storage medium which stores the program code for executing the information processing method according to claim 21.

---

24. Cancelled.

#### REMARKS

Applicants request favorable reconsideration and allowance of this application in view of the foregoing amendments and the following remarks.

Claims 1-6, 8-11, 13-15, 17, 21, and 23 are pending in this application, with Claims 1 and 21 being independent. Claims 7, 12, 16, 18-20, 22, and 24 have been cancelled without prejudice.

Claims 1, 17, 21, and 23 have been amended. Applicants submit that support for the amendments can be found in the original disclosure (for example, at least in Figs. 6 and 7 and the corresponding description), and therefore no new matter has been added.

Claims 1-24 are rejected under 35.U.S.C. §103(a) as being unpatentable over U.S. Patent No. 6,285,959 (Greer) in view of U.S. Patent No. 6,166,744 (Jaszlics, et al.). Applicants respectfully traverse that rejection for the reasons discussed below.

As recited in Claim 1, the present invention includes, *inter alia*, the feature of an input unit adapted to enter information about a match between the position and/or attitude of a real image, which changes according to movement of a mixed reality display device, of a measuring object and a predetermined position and/or attitude of a virtual image of the measuring object. As recited in Claim 21, the present invention includes, among others, the feature of inputting a position and/or attitude information from a sensor when a position and/or attitude of a measuring object included in a real image matches a position and/or attitude of a virtual image of the measuring object by changing a position and/or attitude of a real image input unit. By these features, calibration information can be derived using an output of a position and/or attitude sensor at a time when marks displayed at a predetermined position on an image (i.e., a virtual image having a predetermined position and/or attitude) match marks in a real image. In other words, calibration information can be derived using features of mixed reality technology.

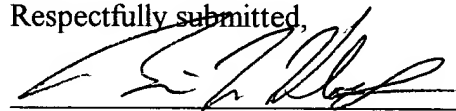
Applicants respectfully submit that the cited art fails to disclose or suggest at least the above-mentioned features. In particular, Applicants submit that Greer does not disclose mixed reality technology, and therefore cannot disclose or suggest at least the above-mentioned features. Further, Jaszlics, et al. does not disclose calibration processing and also does not disclose or suggest at least the above-mentioned claim features. Accordingly, that patent does not remedy the deficiencies of Greer.

For the foregoing reasons, Applicants submit that the present invention recited in Claims 1 and 21 is patentable over the cited art, whether that art is considered individually or taken in combination. The dependent claims are patentable at least for the same reasons as the independent claims, as well as for the additional features they recite.

In view of the foregoing, Applicants submit that this application is in condition for allowance. Favorable reconsideration, withdrawal of the rejection and objection set forth in the above-mentioned Office Action, and an early Notice of Allowance are requested.

Applicants' undersigned attorney may be reached in our Washington, DC office by telephone at (202) 530-1010. All correspondence should continue to be directed to our below-listed address.

Respectfully submitted,



Attorney for Applicants

Brian L. Klock

Registration No. 36,570

FITZPATRICK, CELLA, HARPER & SCINTO  
30 Rockefeller Plaza  
New York, New York 10112-3801  
Facsimile: (212) 218-2200  
BLK/lmj



Application No.: 09/818,600  
Attorney Docket No.: 02355.01211

RECEIVED  
FEB 24 2003  
TECHNOLOGY CENTER 2800

## APPENDIX

### **MARKED-UP VERSION SHOWING AMENDMENTS TO CLAIMS**

1. (Twice Amended) An information processing apparatus that derives the calibration information needed to measure the position and/or attitude of a measuring object based on the output values of a position and/or attitude sensor which is used by a mixed reality display device, comprising:

an input unit adapted to enter information about a match between the position and/or attitude of a real image, which changes according to movement of the mixed reality display device, of a measuring object and a predetermined position and/or attitude of a virtual image of the measuring object;

an acquisition unit adapted to acquire the output values from the position and/or attitude sensor according to the input by said input unit; and

an operation unit adapted to derive the calibration information, based on the predetermined position and/or attitude and the output values of the position and/or attitude sensor acquired by said acquisition unit.

17. (Amended) The information processing apparatus according to Claim 1, further [A mixed reality presentation apparatus which display virtual space superimposed over a picture of captured real space on a display screen or displays virtual space

superimposed over the real space transmitted optically through a display screen, based on the output values of a position and/or attitude sensor,] comprising:

[an information processing apparatus according to claim 10; and]

switching means for switching between presentation mode that presents mixed reality and derivation mode that derives calibration information [; wherein

the calibration information needed for presentation of said mixed reality is derived in said derivation mode and mixed reality is presented using the calibration information in said presentation mode].

21. (Twice Amended) An information processing method [apparatus] that derives the calibration information needed to measure the position and/or attitude of a measuring object based on the output values of a position and/or attitude sensor which is used by a mixed reality display device, comprising the steps of:

entering a real image derived from a real image [an] input unit [adapted to enter information about a match between the position and/or attitude of a real image of a measuring object and a position and/or attitude of a virtual image of the measuring object];

generating a virtual image of a measuring object having a predetermined position and/or attitude; [an acquisition unit adapted to acquire the output values from the position and/or attitude sensor according to the input by said input unit; and]

inputting a position and/or attitude information from the sensor when a position and/or attitude of the measuring object included in the real image matches a

position and/or attitude of a virtual image of the measuring object by changing a position and/or attitude of the real image input unit, and [an operation unit adapted to derive the calibration information, based on the predetermined position and/or attitude and the output values of the position and/or attitude sensor acquired by said acquisition unit]

generating calibration information from the inputted position and/or attitude information.

23. (Twice Amended) A computer-readable storage medium which stores the program code for executing the information processing method [performed using the apparatus of] according to claim 21.